

CLAIMS

1. A thrombus detecting apparatus comprising:

a transducer, which is attached to a monitor
portion of a subject and transmits and receives
5 ultrasonic waves,

a transmitter and receiver unit, which transmits
and applies driving pulses to the transducer and
receives echo signals output from the transducer, and

a detector making use of ultrasonic waves, which
10 processes output signals of the transmitter and
receiver unit and detects a thrombus passing through
a blood vessel, and/or

a light source, which generates living body
inspection light,

15 a probe, which is attached to a monitor portion
of the subject and irradiates the living body inspection
light from the light source to the subject,

a light receiving unit, which receives living body
inspection light irradiated from the probe and passed
20 through the subject and outputs electrical signals
depending on the intensity of the received living body
inspection light, and

a detector making use of living body light, which
processes the output signals of the light receiving unit
25 and detects a thrombus passing through a blood vessel.

2. A thrombus detecting apparatus according to
claim 1, characterized in that the thrombus detecting

apparatus further comprising an alarm device, which generates an alarm based on the detection result of the detector making use of ultrasonic waves and/or making use of living body light.

5 3. A thrombus detecting apparatus according to claim 1 or 2, characterized in that the thrombus detecting apparatus further comprising a portable self power source.

10 4. A thrombus treating apparatus comprising the thrombus detecting apparatus according to claim 1,2 or 3, which is provided with a treatment use ultrasonic wave generating device transmitting ultrasonic waves for dissolving a thrombus flowing through the blood vessel based on the detection result of the detector
15 making use of ultrasonic waves and/or making use of living body light.

5. A thrombus treating apparatus according to claim 4, characterized in that the thrombus treating apparatus further comprising:

20 a living body light measurement apparatus, which observably displays a state of blood stream in the blood vessel, and

 an injection device, which injects thrombus dissolving agent into the blood vessel depending on the
25 state of blood stream in the blood vessel observed by the living body light measurement apparatus.

6. A thrombus treating apparatus according to

claim 5, characterized in that the thrombus treating apparatus further comprising:

5 a control device, which monitors the injection amount of the thrombus dissolving agent by the injection device and the transmission time of the ultrasonic waves by the treatment use ultrasonic generating device and adjusts and controls the injection amount and the irradiation time.

10 7. A thrombus treating apparatus according to claim 6, characterized in that the thrombus treating apparatus further comprising:

15 a thrombus dissolving agent activation use ultrasonic wave generating device, which transmits ultrasonic waves for activating the thrombus dissolving agent injected into the blood vessel from the injection device attached to the subject.

8. A thrombus treating method comprising:

20 a step of transmitting and/or irradiating ultrasonic waves and/or living body inspection light from an ultrasonic wave transducer and/or a living body light measurement probe attached at a monitor portion of a subject toward a blood vessel at the monitor portion,

25 a step of measuring echo signals and/or penetrating living body light from the blood vessel at the monitor portion, and

a step of detecting a thrombus flowing in the blood

vessel at the monitor portion based on the intensity of the measured echo signals and/or penetrating living body light.

9. A thrombus treating method according to claim
5 8 further comprising:

a step of generating an alarm when the thrombus detection number in the detecting step reaches a predetermined number.

10 10. A thrombus treating method according to claim
8 or 9 further comprising:

a step of transmitting treatment use ultrasonic waves toward the blood vessel from the treatment use transducer attached to the subject for dissolving a thrombus passing through the blood vessel when a
15 thrombus is detected in the detecting step or when an alarm is generated in the alarming step.

11. A thrombus treating method according to claim
10 further comprising:

a step of observing and displaying a state of blood
20 stream in the blood vessel by attaching a living body light measurement apparatus to the subject,

a step of injecting a thrombus dissolving agent into the blood vessel depending on the observed and displayed state of blood stream in the blood vessel.

25 12. A thrombus treating method according to claim
11 further comprising:

a step of monitoring the transmission time of the

treatment use ultrasonic waves and the injection amount
of the thrombus dissolving agent and interrupting the
transmission of the treatment use ultrasonic waves and
the injection of the thrombus dissolving agent when a
5 predetermined transmission time and a predetermined
amount are reached.

13. A thrombus treating method according to claim
12 further comprising:

a step of transmitting thrombus dissolving agent
10 activation use ultrasonic waves for activating the
injected thrombus agent toward the blood vessel.

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